L10 Solving Problems Using Quadratic Relations

What we have learned that we will be using:

- factoring and the quadratic formula leads to the roots

- finding the vertex (by factoring, partial factoring, or completing the square) gives you the optimal value

Remember that in word problems it is always important to identify the variables and sketching the parabola can be useful.

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Ex.1 A hose is placed on an aerial ladder. The hose sprays water on a forest fire. The height of the water, *h*, in metres can be modelled by the relation
$h = -2.25(d - 1)^2 + 9$,
where *d* is the horizontal distance, in metres, of the water from the nozzle of the hose.

a) What is the maximum height reached by the water?

b) At what horizontal distance from the nozzle is the maximum height reached?

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where *d* is the horizontal distance, in metres, of the water from the nozzle of the hose.

c) What is the height of the aerial ladder?

d) How high is the water when it is at a horizontal distance of 2m from the nozzle?

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Ex.2 A ball is thrown into the air. Its height, in metres, after *t* seconds, is $h = -4.9t^2 + 39.2t + 1.75$.

a) When does it reach maximum height?

b) What is the maximum height?

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Ex.2 A ball is thrown into the air. Its height, in metres, after t seconds, is $h = -4.9t^2 + 39.2t + 1.75$.

c) From what height is the ball released?

d) When does the ball hit the ground?

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Ex.3 The size of a television screen or computer monitor is usually stated as the length of the diagonal. A screen has a 38-cm diagonal. The width of the screen is 6 cm more than the height. Find the dimensions of the screen to the nearest tenth.

Nov 29-9:17 PM

Assigned Work:

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